A Model of Learning Objectives

based on

A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives

Among other modifications, Anderson and Krathwohl's (2001) revision of the original Bloom's taxonomy (Bloom & Krathwohl, 1956) redefines the cognitive domain as the intersection of the Cognitive Process Dimension and the Knowledge Dimension. This document offers a three-dimensional representation of the revised taxonomy of the cognitive domain.

Although the Cognitive Process and Knowledge dimensions are represented as hierarchical steps, the distinctions between categories are not always clear-cut. For example, all procedural knowledge is not necessarily more abstract than all conceptual knowledge; and an objective that involves analyzing or evaluating may require thinking skills that are no less complex than one that involves creating. It is generally understood, nonetheless, that lower order thinking skills are subsumed by, and provide the foundation for higher order thinking skills.

The Knowledge Dimension classifies four types of knowledge that learners may be expected to acquire or construct—ranging from concrete to abstract (Table 1).

Table 1. The Knowledge Dimension – major types and subtypes

concrete knowledge → abstract knowledge						
factual	conceptual	procedural	metacognitive*			
knowledge of terminology knowledge of specific details and elements	knowledge of classifications and categories knowledge of principles and generalizations knowledge of theories, models, and structures	knowledge of subject-specific skills and algorithms knowledge of subject-specific techniques and methods knowledge of criteria for determining when to use appropriate procedures	strategic knowledge knowledge about cognitive tasks, including appropriate contextual and conditional knowledge self-knowledge			

(Table 1 adapted from Anderson and Krathwohl, 2001, p. 46.)

^{*}Metacognitive knowledge is a special case. In this model, "metacognitive knowledge is knowledge of [one's own] cognition and about oneself in relation to various subject matters..." (Anderson and Krathwohl, 2001, p. 44).

This taxonomy provides a framework for determining and clarifying learning *objectives*.

Learning *activities* often involve both lower order and higher order thinking skills as well as a mix of concrete and abstract knowledge.

The Cognitive Process Dimension represents a continuum of increasing cognitive complexity—from lower order thinking skills to higher order thinking skills. Anderson and Krathwohl (2001) identify nineteen specific cognitive processes that further clarify the scope of the six categories (Table 2).

Table 2. The Cognitive Processes dimension — categories & cognitive processes and alternative names

lower order thinking skills → higher order thinking skills							
remember	understand	apply	analyze	evaluate	create		
recognizing • identifying recalling • retrieving	interpreting	executing • carrying out implementing • using	differentiating	checking	generating • hypothesizing planning • designing producing • constructing		

(Table 2 adapted from Anderson and Krathwohl, 2001, pp. 67–68.)

A statement of a **learning objective** contains a **verb** (an action) and an **object** (usually a noun).

• The verb generally refers to [actions associated with] the intended cognitive process.

• The **object** generally describes the **knowledge** students are expected to acquire or construct. (Anderson and Krathwohl, 2001, pp. 4–5) Create an innovative learnin In this model, each of the colored blocks shows an example of a Reflect Design learning objective that generally corresponds with each of the various on one's an efficient project progress workflow combinations of the cognitive process and knowledge dimensions. Judge efficiency of sampling **Deconstruct** Assemble one's biases. a team of **Remember:** these are **learning** *objectives*—not learning *activities*. techniques Use It may be useful to think of preceding each objective Integrate techniques that match **Determine** Generate compliance with with something like: "Students will be able to . . ." one's strengths relevance of a log of daily regulations activities. **Predict** Carry out one's response to Differentiate Check *Anderson, L.W. (Ed.), Krathwohl, D.R. (Ed.), pH tests of water culture shock high and low for consistency among samples Airasian, P.W., Cruikshank, K.A., Mayer, R.E., culture. sources Pintrich, P.R., Raths, J., & Wittrock, M.C. (2001). Identify Clarify A taxonomy for learning, teaching, and strategies for retaining **Provide** Select assembly Colfe elements to eat to some some into assessing: A revision of Bloom's Taxonomy of information. advice to the most complete list instructions Educational Objectives (Complete edition). novices. of activities. New York: Longman. Recall Classify Respond chelideenens based on how to perform metacognitive adhesives by to frequently asked toxicity. Delegation of the constituent of auestions. How to do something methods.

How to do something he for hidres, and criteria fer hidres, and criteria fer hidres, and methods. procedural Recognize **Summarize** symptoms of features of a new in a Bing rise a Procedure exhaustion. product. conceptual The interrelationships among understand The interrelationships among List Construct meaning from the basic elements within a larger structure that enables primary and secondary Instructional messages Incliding of the little of the larger structure that enable. colors. The basic elements students Retrieve relevant knowledge remember The basic elements students of the hours of Fon long tern menon. nust know to be acquainted Model created by: Rex Heer Iowa State University Center for Excellence in Learning and Teaching Updated January, 2012 Licensed under a Creative Commons Attribution-**IOWA STATE UNIVERSITY** NonCommercial-ShareAlike 3.0 Unported License. Center for Excellence in For additional resources, see: Learning and Teaching www.celt.iastate.edu/teaching/RevisedBlooms1.html